

HARDWARE-ACCELERATED COMPUTATION OF RADIANCE TRANSFER COEFFICIENTS IN COMPUTER GRAPHICS

5 Abstract

A hardware-accelerated process of computing radiance transfer coefficients (such as for use in image rendering based on precomputed radiance transfer (PRT) techniques) is re-ordered as compared to previously known PRT precomputations to iterate over a sampling of directions about an object. The hardware-accelerated process uses a set of textures representing positions and normals for a sampling of points over a modeled object. In iterating over the directions, the process computes the depth of the object in a shadow buffer, then computes a texture of the radiance contribution based on the normal and position textures and depth from the shadow buffer. The resulting radiance contribution textures of the iterated directions are accumulated to produce a texture representing the radiance transfer coefficients of the sampled positions. This enables the process to avoid reduction operations, ray tracing and slow read-back path limitations of graphical processing units.

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